C. O. MARX.

ELEVATOR DOOR HANGER.

APPLICATION FILED MAY 17, 1916.

1,198,252.

Patented Sept. 12, 1916.

Fig. 1,

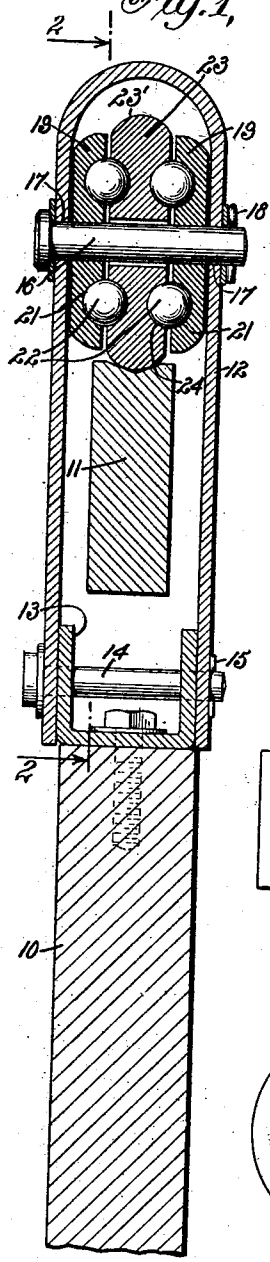


Fig. 2,

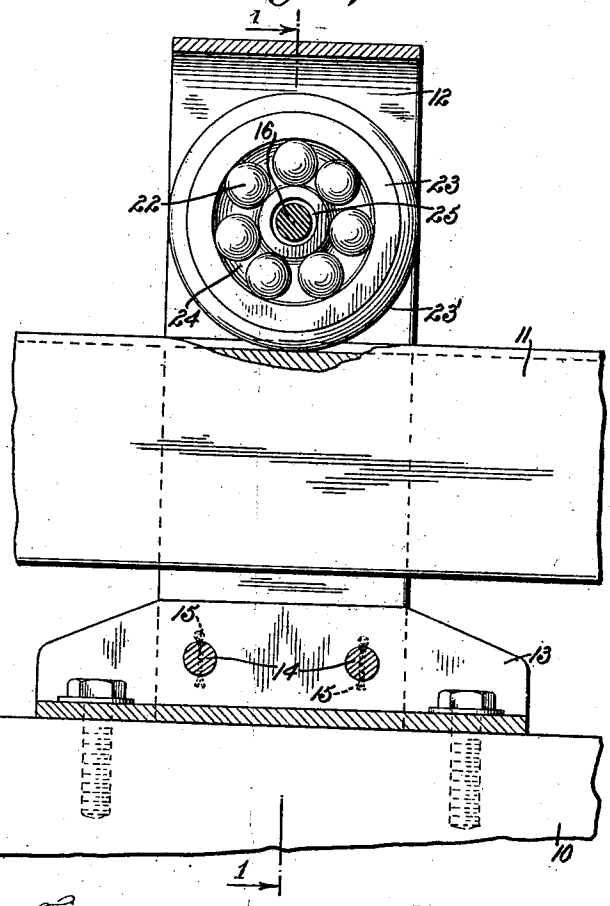


Fig. 3,

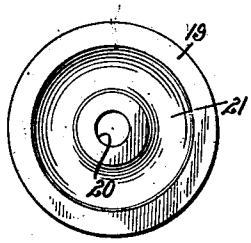
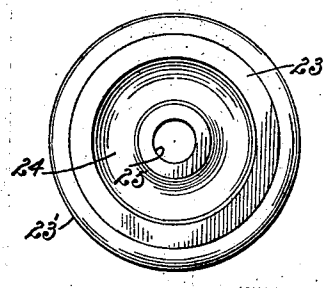


Fig. 4.



WITNESSES

L. Hauerstein

Geo. L. Reeder

INVENTOR

C. O. Marx

BY Munn & Co.

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES O. MARX, OF NEW YORK, N. Y., ASSIGNOR TO ELEVATOR EFFICIENCY APPLIANCE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

ELEVATOR-DOOR HANGER.

1,198,252. Specification of Letters Patent. Patented Sept. 12, 1916.

Application filed May 17, 1916. Serial No. 98,050.

To all whom it may concern:

Be it known that I, CHARLES O. MARX, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Elevator-Door Hanger, of which the following is a full, clear, and exact description.

This invention relates to hangers for doors such as are adapted to be used on elevator constructions, car doors, barn doors or the like.

Among the objects of this invention is to specifically and particularly improve that type of devices shown and claimed in Letters Patent of the United States, No. 1,041,833, of October 22, 1912.

Another object of the invention is to simplify the construction in such a manner that the assemblage or disassemblage may be accomplished with the least possible amount of trouble and without danger of interfering with the proper operation of the mechanism.

A further object of the invention is to provide an anti-friction door hanger including a casing, a sectional anti-frictional member within the casing, and a smooth supporting member, said member constituting not only a support, but also a spindle around which any or all of the bearing parts may turn.

With the foregoing and other objects in view the invention consists in the arrangement and combination of parts hereinafter described and claimed, and while the invention is not restricted to the exact details of construction disclosed or suggested herein, still for the purpose of illustrating a practical embodiment thereof reference is had to the accompanying drawings, in which like reference characters designate the same parts in the several views, and in which—

Figure 1 is a vertical transverse section on the line 1—1 of Fig. 2; Fig. 2 is a vertical longitudinal section on the line 2—2 of Fig. 1; and Figs. 3 and 4 are side elevations of different parts of the anti-friction bearing, referred to more in detail below.

Referring now more particularly to the drawings, I show at 10 a member supported from an overhead rail 11. This member 10 may be referred to for the purpose of the present consideration as a door or gate adapted to be moved laterally parallel to the rail.

The hanger comprises a casing 12 formed preferably of plate metal and bent into the form of an inverted U, the free ends of which are connected in any suitable manner to an anchor 13 connected to the upper edge of the door. The means shown for making this connection consists of a plurality of pins 14 held in place detachably by cotter pins 15. The casing 12 may be of comparatively light metal, but possessed of sufficient stiffness and strength to maintain a definite shape in practice with the two side portions or legs parallel.

The anti-friction device coöperating with the casing to support the door and hanger upon the rail, comprises a smooth cylindrical pin 16 passing transversely through holes 17 in the parallel legs of the casing and held in place by a removable cotter pin 18. Upon the pin within the casing and close against the inner surfaces of the side legs, are a pair of disks 19, each having a central hole 20 having close but movable fit around the pin. The inner surface of each disk, or that surface facing the other disk, is provided with a raceway 21 concentric with the hole 20 and having a substantially semi-circular form in cross section, in which a series of balls 22 operate. The last member of the anti-friction device consists of a disk-shaped wheel 23 having a convex tread 23′ coöperating with the upper edge of the rail 11, preferably by a two point contact, but as to the particular form of the tread and rail, I do not wish to be unnecessarily limited. Each face of the disk 23 is provided with a raceway 24 of the same size and form as the raceways 21, and into which the balls 22 project with the adjacent faces of the disks 19 and 23 in close proximity. The disk 23 also is provided with a central hole 25 larger than the holes 20 of the side disks, so as to be free from contact with the pin 16. The diameter of the main bearing disk 23 is larger than that of the side disks, so that there is no contact between the side disks and the track.

The casing 12 being rigid and the pin being fitted snugly in the holes 17 thereof, though removable therefrom when desired, and the side disks 19 being fitted moderately snugly around the pin 16, these disks 19 are held positively from tilting out of vertical planes, even though considerable weight may be borne by the central disk 23.

The direct contact with the rail is had through the disk 23, and it in turn is supported entirely by the balls 22. A direct thrust upon the balls is sustained at both the top and the bottom of the system. Since the raceways 21 and 24 are all substantially of semi-circular form in cross section, receiving in each practically one-half of each of the balls, the strength of each ball, tending to resist the load thereon, is enormous and the friction is reduced to the minimum, it being practically all rolling friction. I wish to point out at this time several other advantages peculiar to this improvement. First, the parts are so designed and proportioned that no special care is required in assembling to provide for perfect anti-friction operation. In the assembling of the bearing, one disk 19 is laid face upward and the desired number of balls are put into the raceway thereof. Then the central disk 23 is applied and another series of balls put into the raceway thereof, and then the other side disk is applied. The three disks thus assembled can then be handled with facility without immediate danger of separation or loss of the balls. This assemblage is then slipped into the casing between the side legs thereof and the pin 16 is passed through the alined holes and fastened, as shown. The space between the legs of the casing is such that no great amount of separation can take place between any two of the disks, and hence there is always a perfect easy rolling friction of the device and with no possibility for lateral tilting of any of the parts. In the event that any of the balls should become damaged or broken, or if a particle of grit or dirt be accidentally received in the roller bearing tending to lock the same and do serious damage to the mechanism, either of the disks 19 may be rotated around the stationary pin 16. The result of this action is usually to relieve the locking effect, because of the fact that the normally stationary disk 19 is given a change of position. Usually a quarter or half turn of one of these disks is sufficient to set the roller bearing perfectly free again. If, however, the condition is such that the locking effect is persistent, the bearing is such that the action may be continued indefinitely around the pintle 16 with no greater damage than to cause a slightly greater friction.

I claim:

The herein described door hanger comprising a casing having a pair of parallel vertical side legs having alined smooth holes formed therein, a smooth cylindrical pin fitted in said holes, means to hold the pin removably in position, a pair of side disks fitted snugly but rotatably around said pin against the inner faces of the side legs of the casing, each of said disks having a circular raceway on its inner face concentric with the pin, a main load supporting central disk practically filling the space between the side disks and of slightly greater diameter than the side disks, said central disk having a central hole larger than the pin and spaced therefrom and being provided on its opposite faces with circular raceways complemental to the aforesaid raceways, and series of balls operating in the aforesaid raceways and constituting the only connections between the central disk and the other parts of the structure, said side disks being positively held by the pin from tilting movement.

CHARLES O. MARX.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."